FLUSHING AND LUBRICATION

GENERAL

Flushing the cooling system with fresh water is essential to neutralize corroding effects of salt or other chemical products present in water. It will help to clean up sand, salt, shells or other particles in water jackets (engine, intercooler (if so equipped), exhaust manifold, tuned pipe) and/or hoses.

Cooling system flushing and engine internal lubrication should be performed when the watercraft is not expected to be used further the same day or when the watercraft is stored for any extended time.

CAUTION: Failure to flush cooling system, when necessary, will severely damage engine intercooler and/or exhaust system. Never flush a hot engine. Make sure engine operates during entire procedure.



⚠ WARNING

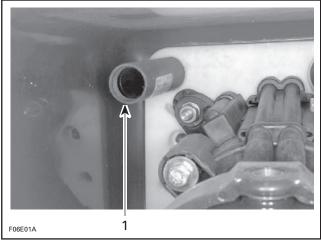
Perform this operation in a well ventilated area. Do not touch any electrical parts or jet pump area when engine is running.

Clean jet pump by spraying water in its inlet and outlet and then apply a coating of BOMBARDIER LUBE lubricant.

⚠ WARNING

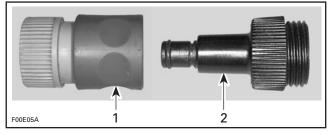
Always remove safety lanyard cap from post to prevent accidental engine starting before cleaning the jet pump area. Engine must not be running for this operation.

Connect a garden hose to the hose adapter located at the rear of the watercraft on jet pump support.

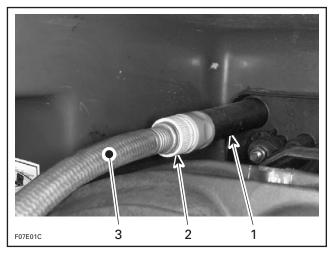


1. Hose adapter

For an easier installation, the flushing adapter (P/N 295 500 473) can be used with a quick connect adapter.



- Quick connect adapter
- 2. Flushing adapter (P/N 295 500 473)



- 1. Hose adapter
- 2. Flushing and quick connect adapters (not mandatory)

3. Garden hose installed

Subsection 02 (FLUSHING AND LUBRICATION)

All Models except 4-TEC Models

NOTE: No hose pincher is required to flush cooling system.

To flush cooling system, start the engine then immediately open the water tap.

⚠ WARNING

Components inside engine compartment may be hot. Do not touch any electrical parts or jet pump area when engine is running.

CAUTION: Never flush a hot engine. Always start the engine before opening the water tap. Open water tap immediately after engine is started to prevent overheating.

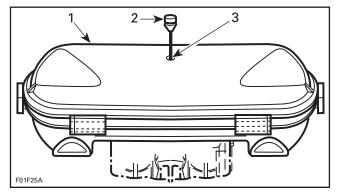
Run the engine about 3 minutes at a fast idle around 3500 RPM.

Ensure water flows out of drain lines (engine crankcase, engine cylinder and air compressor (DI models) while flushing. Otherwise, clean the lines.

CAUTION: Never run engine longer than 5 minutes. Drive line seal has no cooling when watercraft is out of water.

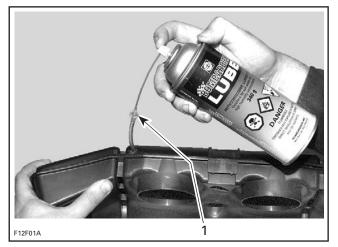
Spray BOMBARDIER LUBE lubricant through air intake silencer.

NOTE: An increase of engine RPM may be noticed while spraying the lubricant in the air intake silencer.



717 AND 787 RFI ENGINES

- 1. Air intake silencer
- 2. Pull plug
- 3. Spray BOMBARDIER LUBE here



947 DI ENGINES

 Partially pull tube out of air box to inject BOMBARDIER LUBE lubricant or equivalent. Push tube in when finished

Lubrication of engine should be done for at least 1 minute.

After approximately half a minute, close fuel valve (if so equipped) to run engine out of fuel while lubricating.

CAUTION: When engine begins to run irregularly because of fuel starvation, immediately stop water flow before engine dies.

Close the water tap then stop the engine.

CAUTION: Always close the water tap before stopping the engine.

Disconnect the garden hose.

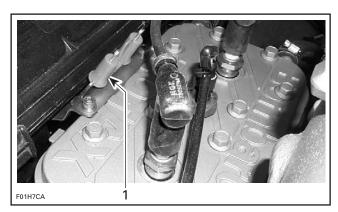
CAUTION: Remove flushing adapter after operation (if used).

Wipe up any residual water from the engine.

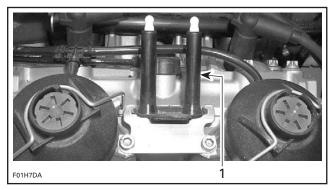
Remove spark plug cables and connect them on the grounding device.

⚠ WARNING

Always use spark plug cable grounding device when removing spark plugs.



717 ENGINE
1. Grounding device



787 RFI AND 947 DI ENGINES
1. Grounding device

Remove both spark plugs and spray BOM-BARDIER LUBE lubricant into each cylinder.

GTI/GTI LE Models

Connect safety lanyard cap to the post.

Crank the engine a few turns to distribute the oil onto cylinder wall.

GTI RFI/GTI LE RFI Models

Remove safety lanyard from its post.

Depress the throttle lever at full throttle position and hold.

Reinstall the safety lanyard cap on its post.

Crank the engine a few turns to distribute the oil on cylinder wall.

NOTE: Proceeding in this order, no fuel will be injected into the engine.

XP DI Model

To prevent fuel to be injected and also to cut the ignition at the engine starting, proceed as follows.

While engine is stopped, fully depress throttle lever and HOLD for cranking.

Wait 2 seconds then press the start/stop button to crank the engine a few turns and distribute the lubricant onto cylinder walls.

NOTE: A 1 second beep every second indicates the drowned mode is active.

Crank the engine a few turns to distribute the oil on cylinder wall.

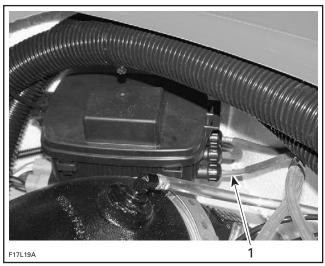
All Models except 4-TEC

Apply anti-seize lubricant on spark plug threads then reinstall them.

Properly reconnect spark plug cables to spark plugs.

⚠ WARNING

On **DI models** always reconnect spark plug cables at the same spark plugs where they come from. The cable coming out the edge of the electrical box must be connected to the MAG side spark plug.



XP DI MODEL

1. MAG side spark plug cable

Wipe up any residual water from the engine.

Reinstall plug on air intake silencer cover (if so equipped, on 717 and 787 RFI engines).

NOTE: Engine fogging should be done with BOMBARDIER LUBE lubricant whenever the watercraft is to be stored for a few days or a long period.

CAUTION: Never leave rags or tools in the engine compartment or in the bilge.

Subsection 02 (FLUSHING AND LUBRICATION)

4-TEC Engines

Closed Loop Cooling System

The 4-TEC engines are equipped with a closed loop cooling system which does not need to be flushed even after salt water use.

Open Loop Cooling System

Flushing the exhaust cooling system including the intercooler (if so equipped) with fresh water is essential to neutralize corroding effects of salt or other chemical products present in water. It will help to remove sand, salt, shells or other particles in water jackets and/or hoses.

Flushing should be performed when the watercraft is not expected to be used further the same day or when the watercraft is stored for any extended time.

⚠ WARNING

Perform this operation in a well ventilated area. Do not touch any electrical part or jet pump area when engine is running.

Proceed as follows:

Clean jet pump by spraying water in its inlet and outlet and then apply a coating of BOMBARDIER LUBE lubricant or equivalent.

⚠ WARNING

Always remove safety lanyard cap from post to prevent unexpected engine starting before cleaning the jet pump area. Engine must not be running for this operation.

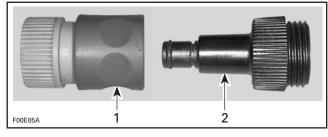
Models without a Flushing Connector in Engine Compartment

Connect a garden hose to connector located at the rear of watercraft on jet pump support. Do not open water tap yet.

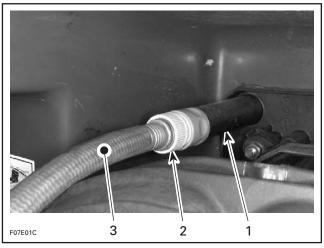
⚠ WARNING

When operating the engine while the watercraft is out of the water, the heat exchanger in the ride plate may become very hot. Avoid any contact with ride plate as burns may occur.

NOTE: An optional flushing adapter (P/N 295 500 473) can be used with a quick connect adapter to ease garden hose installation.



- 1. Quick connect adapter
- 2. Flushing adapter (P/N 295 500 473)



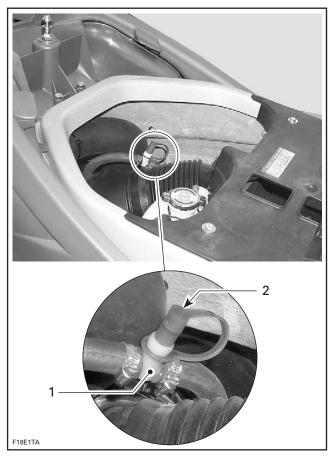
TYPICAL

- 1. Hose adapter
- 2. Quick connect and flushing adapters (optional, not mandatory)
- 3. Garden hose

Models with a Flushing Connector in Engine Compartment

This flushing connector allows flushing while watercraft is on a lift or if you prefer to flush from this location. Either flushing connector can be used to flush the exhaust cooling system including the intercooler (if so equipped). The one at the jet pump support (see above) or the one in the engine compartment (see below).

Remove seat to gain access.



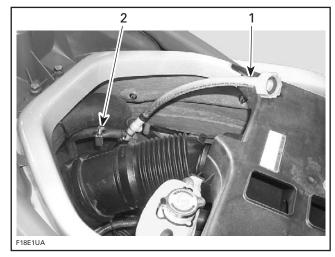
1. Flushing connector

2. Dust cap

Remove dust cap from flushing connector and attach coupler hose (supplied with vehicle). Make sure coupler hose is properly locked to flushing connector.

Install a hose pincher (supplied inside tool kit) on water outlet hose.

NOTE: This prevents water from directly exiting exhaust cooling system.



1. Coupler hose

2. Hose pincher

Attach other end of coupler hose to a garden hose. Do not open water tap yet.

All 4-TEC Models

Flushing

To flush the open loop cooling system, start the engine then immediately open the water tap.

⚠ WARNING

Certain components in the engine compartment may be very hot. Direct contact may result in skin burn. Do not touch any electrical part or jet pump area when engine is running.

CAUTION: Never flush a hot engine. Always start the engine before opening the water tap. Open water tap immediately after engine is started to prevent overheating.

Run the engine about 20 seconds at a fast idle between 4000 - 5000 RPM.

CAUTION: Never run engine without supplying water to the exhaust cooling system when watercraft is out of water.

Ensure water flows out of jet pump while flushing.

CAUTION: Never run engine longer than 5 minutes. Drive line seal has no cooling when watercraft is out of water.

Close the water tap, then stop the engine.

CAUTION: Always close the water tap before stopping the engine.

Subsection 02 (FLUSHING AND LUBRICATION)

Models without a Flushing Connector in Engine Compartment

Disconnect the garden hose.

CAUTION: Remove flushing adapter after operation (if used).

Models with a Flushing Connector in Engine Compartment

Unlock and remove coupler hose. Reinstall dust cap over flushing connector.

Remove hose pincher from water outlet hose.

CAUTION: Serious damage to exhaust system can occur if hose pincher is not removed.

NOTE: Engine valves fogging should be done whenever the watercraft is to be stored for a long period. Refer to STORAGE section.

ANTICORROSION TREATMENT

All Models

To prevent corrosion, spray a corrosion inhibitor (salt water resistant) such as BOMBARDIER LUBE lubricant or equivalent over metallic components in engine compartment.

Apply dielectric grease (salt water resistant) on battery posts and cable connectors.

WATER-FLOODED ENGINE

GENERAL

If engine is water-flooded, it must be serviced within a few hours after the event. Otherwise engine will have to be overhauled.

CAUTION: A water-flooded engine must be properly lubricated, operated then lubricated again, otherwise parts will be seriously damaged.

PROCEDURE

2-Stroke Models

Check fuel and oil reservoirs for water contamination. If necessary, siphon and refill with fresh fluids

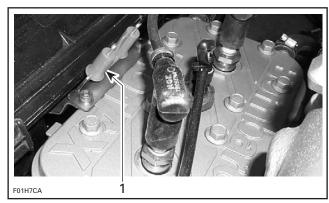
Turn fuel valve to OFF position (CARBURETOR-EQUIPPED MODELS) then drain fuel filter bowl. Refer to FUEL CIRCUIT.

Drain bilge if water is present.

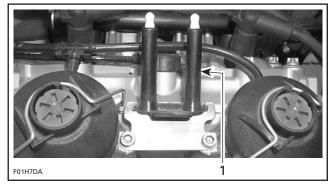
Remove spark plug cables and connect them on the grounding device.

⚠ WARNING

Never crank engine with spark plugs removed unless spark plug cables are connected to the grounding device.



GTI AND GTI LE MODELS
1. Grounding device



787 RFI AND 947 DI MODELS
1. Grounding device

Remove spark plugs and dry them with a clean cloth. A contact cleaner spray can be used. It may be preferable to replace spark plugs. Do NOT install spark plugs on engine yet.

Cover spark plug holes with a rag.

⚠ WARNING

Be careful when cranking engine in the following procedure, water will spray out from spark plug holes.

Carburetor-Equipped Models

Fully depress the throttle lever then crank the engine to drain crankcase.

NOTE: Ensure choke lever is completely pushed in.

787 RFI Models

NOTE: Proceeding in the following order, no fuel will be injected into the engine.

Remove safety lanyard from its post.

Depress and hold the throttle lever at full throttle position. Wait 2 seconds then, reinstall the safety lanyard cap.

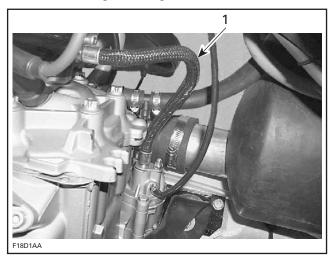
Press the start/stop button to crank the engine to allow water to escape from spark plug openings.

947 DI Models

Remove the air pressure hose from the compressor.

Subsection 03 (WATER-FLOODED ENGINE)

CAUTION: Failure to remove the air pressure hose from the compressor will result in the bending of the compressor connecting rod, when cranking the engine.



1. Disconnect this hose

Remove the flywheel guard and turn the PTO flywheel several times, by hand.

CAUTION: Proceeding in the following order, no fuel will be injected into the engine and ignition will be cut.

While engine is stopped, fully depress throttle lever and HOLD for cranking.

Crank engine several times to drain crankcase.

NOTE: A 1 second beep every second indicates the drowned mode is active.

If water does not completely go out, it may be necessary to remove the air intake silencer then to lean the vehicle so that water can flow out from throttle bodies.

All Models except 4-TEC

Spray BOMBARDIER LUBE lubricant (P/N 293 600 016) into spark plug holes.

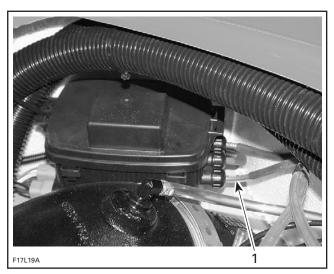
Crank engine again.

Reinstall spark plugs and spark plug cables.

947 DI Engines

⚠ WARNING

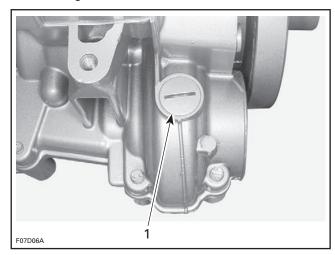
Always reconnect spark plug cables at the same spark plugs where they come from. The cable coming out the edge of the electrical box must be connected to the MAG side spark plug.



1. MAG side spark plug cable

787 RFI Engines

Remove the filler plug of the counterbalance shaft on the engine crankcase.

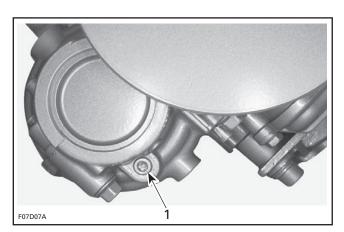


787 RFI ENGINES1. Remove filler plug

Insert a wire through oil filler hole to check oil condition. A whitish oil indicates water contamination and must be replaced.

In order to replace the oil, remove the drain plug of the counterbalance shaft located on the PTO side of the lower crankcase.

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787 RFI ENGINES 1. Drain plug

Drain completely the crankcase oil of the counterbalance shaft. Reinstall drain plug with Loctite 515.

Add 30 mL (1 oz) of SAE 30 motor oil.

Reinstall filler plug.

Carburetor-Equipped Models

Turn fuel valve to ON position.

Start engine. It may be necessary to use the choke. If engine does not start, repeat previous steps as necessary.

787 RFI and 947 DI Models

Start engine according to normal starting procedure.

All Models except 4-TEC

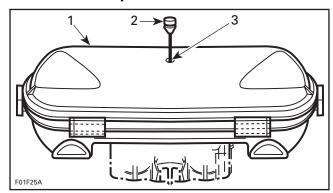
CAUTION: To avoid starting motor overheating, the cranking period should not exceed 5 -10 seconds and a rest period of 30 seconds should be observed between cranking cycles.

NOTE: If engine does not start after several attempts, check ignition system for spark occurrence. Refer to IGNITION SYSTEM for 717 and 787 RFI engines and refer to ENGINE MANAGE-MENT for 947 DI engines.

Check crankshaft if needed, it may be misaligned or deflected. Refer to BOTTOM END.

After engine has started, spray BOMBARDIER LUBE lubricant for one minute through air intake silencer while engine is running.

All Models except 947 DI and 4-TEC Models



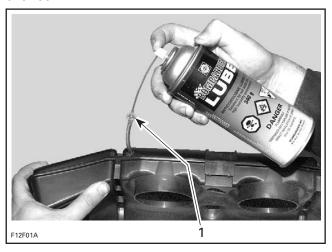
717 AND 787 RFI ENGINES

- 1. Air intake silencer
- Pull plug
 Spray BOMBARDIER LUBE here

947 DI Models

Spray, through hole of air intake silencer.

NOTE: An increase of engine RPM may be noticed while spraying the lubricant in the air intake silencer.



1. Partially pull tube out of air box to inject BOMBARDIER LUBE lubricant or equivalent. Push tube in when finished

Run engine until it reaches its normal operating temperature.

CAUTION: Engine must be cooled using the flush kit.

4-TEC Models

Check fuel reservoir for water contamination. If necessary, siphon and refill with fresh fuel.

To limit damages to the engine, perform the following procedure as soon as possible.

Drain bilge if water is present.

Subsection 03 (WATER-FLOODED ENGINE)

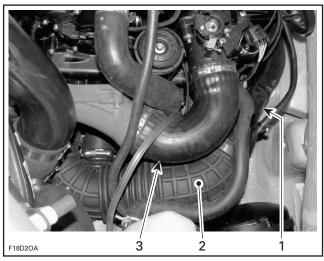
If it was submerged in salt water, spray bilge and all components with fresh water using a garden hose to stop the salt corroding effect.

CAUTION: Never try to crank or start the engine. Water trapped in the intake manifold would enter the combustion chamber through the intake valves and may cause damage to the engine.

Whenever the engine is stopped, all the valves close thus preventing water from being ingested in the engine.

Supercharged 4-TEC Engines

Inlet duct should be disconnected from supercharger inlet tube to validate presence of water.



- 1. Inlet duct
- 2. Inlet hose
- 3. Outlet hose

If water is suspected to be in the supercharger, remove its outlet hose and siphon water out. Ensure that siphon tube is inserted to the lowest point in the supercharger.

NOTE: Keep outlet hose disconnected and continue procedures below. This way, when engine will be started, possible water trapped in supercharger will be pushed out. Then, the hose can be reconnected.

If necessary, remove supercharger housing.

All 4-TEC Engines

If water is suspected to be in the intake and the exhaust system, it must be drained as follows:

Remove the intake manifold and drain it. Then suck out the water from the intake valve ports. Refer to subsection INTAKE SYSTEM.

Remove the water from oil/air separator breather hose.

Remove the exhaust pipe and drain it. Then either remove the mufflers to drain them or siphon the water out of them. Refer to subsection EXHAUST SYSTEM

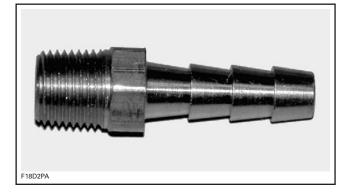
If water gets in the oil (oil will be milky), change the engine oil and filter as follows.

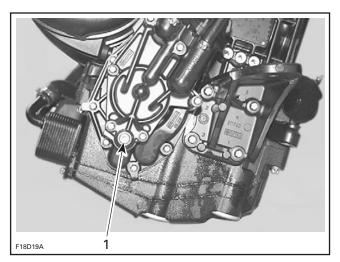
Oil Change Procedure (water-contaminated oil)

 Using the oil VAC (P/N 529 035 880), siphon oil from reservoir through dipstick hole.

CAUTION: Never crank or start engine when siphon tube is in dipstick hole. Never start engine when there is no oil in engine.

- Remove the oil vac tool from the dipstick hole.
- While in drowned engine mode, crank the engine for 5 seconds.
- Remove the oil filter cap and the oil filter.
- Again, siphon oil from the reservoir.
- Put a rag under the scavenge oil pump cover.
- Remove the scavenge oil pump cover drain plug and install a fitting (P/N 293 710 037).





1. Scavenge oil pump cover drain plug

- Connect the oil vac tool Bombardier (P/N 529 035 880) to the fitting.
- The front of the engine must be tilted down approximately 15 degrees to facilitate the removal of the oil. Raise the rear of the boat accordingly. Siphon the oil from the fitting.
- Level the engine.
- Remove the oil vac tool and the fitting. Apply Loctite 243 and reinstall the drain plug.

NOTE: If spillage occurs, clean immediately with the Pulley flange cleaner (P/N 413 711 809) to prevent oil stains.

- Install a new oil filter and reinstall the oil filter cap.
- Fill up the reservoir with fresh oil.
- Boil out the remaining water as follows:
 - Recommended procedure: BOIL OUT PRO-CEDURE IN A TEST TANK OR TIED TO A TRAILER WITH WATERCRAFT IN WATER.
 - Optional procedure: BOIL OUT PROCE-DURE CONNECTED TO A FLUSH KIT.

Refer to instructions below.

Boil Out Procedure

NOTE: This procedure is intended to evaporate the water contained in the oil.

Procedure in a Test Tank or Tied to a Trailer with Watercraft in Water

Run the engine for 5 minutes at 3500 RPM.

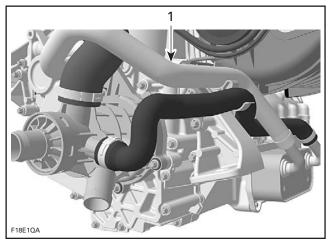
⚠ WARNING

Make sure to safely secure the watercraft.

With the engine still running at 3500 RPM, install a hose pincher to the coolant line going to the oil cooler.

↑ WARNING

Certain components in the engine compartment may be very hot. Direct contact may result in skin burn. Do not touch any electrical parts or jet pump area when engine is running.



1. Oil cooler coolant inlet hose

- Continue to run the engine at 3500 RPM for 15 more minutes (20 minutes total run time).
- Shut the engine off.
- Remove the hose pincher on the coolant line going to the oil cooler.

CAUTION: Hose pincher must be removed prior to operating the watercraft. Failure to do this will result in damage to the engine.

- Change the oil and filter again.
- Procedure is now completed.

Procedure Connected to a Flush Kit

 On drive shaft, remove the C-clip then move forward the ring seal carrier. Refer to DRIVE SYSTEM section.

CAUTION: Make sure that the ring seal carrier is not in contact with the PTO seal assembly, neither with the carbon ring.

Connect a flush kit to the coolant line.

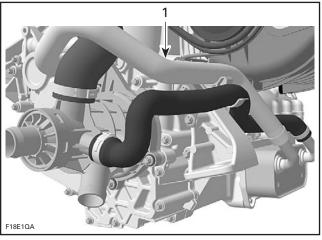
Subsection 03 (WATER-FLOODED ENGINE)

CAUTION: Never run engine without supplying water to the exhaust cooling system when watercraft is out of water.

- Run the engine for 5 minutes at 3000 RPM.
- With the engine still running at 3000 RPM, install a hose pincher to the coolant line going to the oil cooler.

⚠ WARNING

Certain components in the engine compartment may be very hot. Direct contact may result in skin burn. Do not touch any electrical parts or jet pump area when engine is running.



- 1. Oil cooler coolant inlet hose
- Continue to run the engine at 3000 RPM for 15 more minutes (20 minutes total run time).
- Shut off the engine.
- Remove the hose pincher on the coolant line going to the oil cooler.

CAUTION: Hose pincher must be removed prior to operating the watercraft. Failure to do this will result in damage to the engine.

- Change the oil and filter again.
- Move rearward the Ring Seal Carrier and reinstall the C-clip. Refer to DRIVE SYSTEM section.

Water in Supercharger Supercharged 4-TEC Engines

If there was water in the oil and presence of water is suspected in the shaft and bearing area of the supercharger, it is recommended to take the supercharger apart, dry all the components including the slip clutch and replace both ball bearings. Refer to INTAKE SYSTEM.

Finalizing the Procedure *All 4-TEC Engines*

The watercraft should be ridden as soon as possible to dry it out.

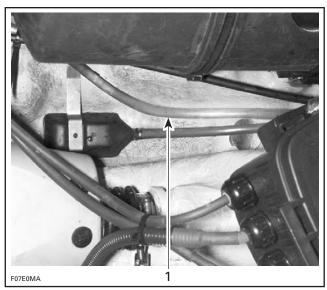
STORAGE

ENGINE DRAINING

All Carburetor-Equipped Engines

Check engine drain hose (lowest hose of engine). Make sure there is no sand or other particles in it and that it is not obstructed so that water can exit the engine. Clean hose and fitting as necessary.

CAUTION: Water in engine drain hose must be free to flow out, otherwise water could be trapped in engine. Should water freeze in engine, severe damage will occur. Check engine drain hose for obstructions.

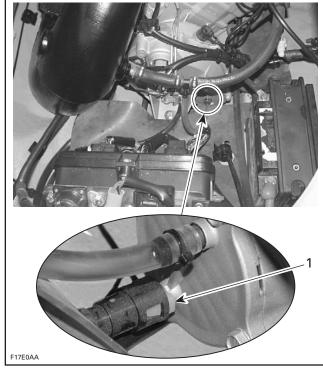


TYPICAL
1. Engine drain hose

RFI Models

Disconnect the water supply hose used to cool the magneto. It features a quick connect fitting. Press both tabs and pull fitting in order to disconnect hose.

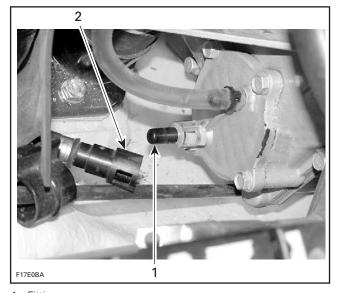
This hose is located at the bottom of the magneto cover beside the engine support.



TYPICAL

1. Press tabs here and disconnect hose

Water should flow out of the fitting (magneto cool ing circuit) and hose (crankcase heat exchanger). Push and hold hose against bilge so that draining can take place.



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- 1. Fitting
- 2. Hose

Subsection 04 (STORAGE)

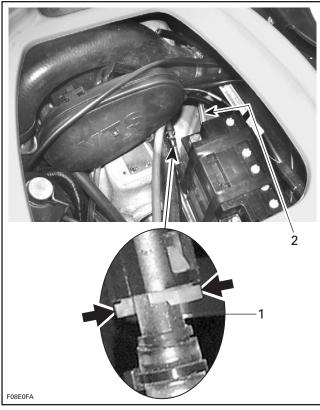
CAUTION: Water in heat exchanger system must be free to flow out. Should water freeze in engine, severe damage will occur.

Reconnect hose when done.

DI Models

Disconnect the quick connect fitting. Press both tabs and pull fitting.

NOTE: Illustration also shows air compressor line.



XP DI MODELS — DISCONNECT THIS HOSE

- 1. Disconnect engine drain hose (crankcase cooling outlet)
- 2. Air compressor drain line

Lower hose as necessary so that draining can take place.

Reconnect hose when done.

Also ensure air compressor drain line is not obstructed. See illustration above. Clean as necessary.

PROPULSION SYSTEM

Jet Pump

All Models except 4-TEC Models

Lubricant in impeller shaft reservoir should be drained. Reservoir should be cleaned and refilled with SEA-DOO synthetic 75W90 GL5 polyester oil. Refer to JET PUMP for proper procedure.

CAUTION: Use only SEA-DOO jet pump oil or equivalent synthetic gear oil, otherwise component service life could be reduced. Do not mix oil brands or types.

4-TEC Models

Verify jet pump grease for water contamination. Check for the presence of water in cone and bearing; if so, replace oil seal and sleeve.

CAUTION: Use only Bombardier jet pump grease or equivalent, otherwise components service life could be reduced. Do not mix grease brands or types.

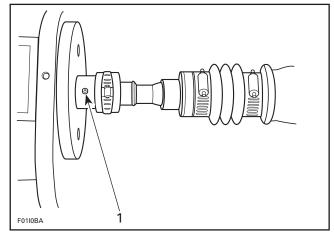
PTO Flywheel

All 2-Stroke Models except XP DI

Remove PTO flywheel guard.

Lubricate PTO flywheel at grease fitting with synthetic grease (P/N 293 550 010).

CAUTION: Do not lubricate excessively. Immediately stop when a slight movement is noticed on rubber boot.

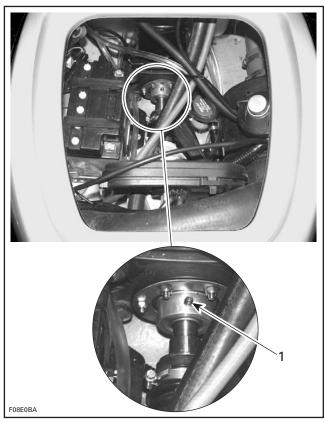


1. Grease PTO flywheel

CAUTION: Never leave any clothing, tool or other objects near PTO flywheel and drive shaft.

SEAL CARRIER XP DI Models

Lubricate seal carrier of drive shaft support with synthetic grease. Stop lubricating when grease is just coming out of seal.



1. Grease seal carrier

FUEL SYSTEM

All Models

Verify fuel system. Check fuel hoses and carburetor(s), if so equipped, for leaks. Replace damaged hoses or clamps if necessary.

Sea-Doo Fuel Stabilizer (P/N 413 408 600) or equivalent should be added in fuel tank to prevent fuel deterioration and, if so equipped, carburetor(s) gumming. Follow manufacturer's instructions for proper use.

On RFI and DI models, fill up fuel tank completely. Ensure there is no water inside fuel tank.

CAUTION: Should any water be trapped inside fuel tank, severe internal damage will occur to the fuel injection system (if so equipped).

CAUTION: Fuel stabilizer should be added prior to engine lubrication to ensure fuel system components protection against varnish deposits.

⚠ WARNING

Fuel is inflammable and explosive under certain conditions. Always work in a well ventilated area. Do not smoke or allow open flames or sparks in the vicinity. Fuel tank may be pressurized, slowly turn cap when opening. Never use an open flame to check fuel level. When fueling, keep watercraft level. Do not overfill or top off the fuel tank and leave watercraft in the sun. As temperature increases, fuel expands and might overflow. Always wipe off any fuel spillage from the watercraft. Periodically inspect fuel system. Always turn the fuel tank valve (if so equipped) to OFF position when storing the watercraft.

Carburetor-Equipped Models

Always turn the fuel valve to OFF position when storing the watercraft.

ENGINE OIL CHANGE AND FILTER

4-TEC Engines

Change engine oil and filter. Refer to LUBRICA-TION in ENGINE section.

All Models

COOLING SYSTEM FLUSHING AND ENGINE INTERNAL LUBRICATION

Cooling system (exhaust cooling system on 4-TEC models) has to be flushed with fresh water to prevent salt, sand or dirt accumulation which will clog water passages.

Engine must be lubricated to prevent corrosion on internal parts.

For proper procedure, refer to FLUSHING AND LUBRICATION.

ENGINE LUBRICATION

4-TEC Engines

Engine must be lubricated to prevent corrosion on internal parts.

Subsection 04 (STORAGE)

Fogging of the engine is recommended at the end of the season and before any extended storage period to provide additional corrosion protection. This will lubricate the engine intake valves, the cylinders and the exhaust valves.

To fog the engine, proceed as follows:

- Remove the two bolts that hold the fuel rail on.
- Remove the rail along with the three fuel injectors.
- Spray liberally BOMBARDIER LUBE lubricant into the intake ports.
- Crank engine several times while keeping throttle fully depressed (drown engine mode) to distribute lubricant in cylinders, on intake valves and exhaust valves.
- Carefully inspect O-rings condition before reinstalling fuel injectors. Replace O-rings with new ones if damaged. Lubricate O-rings with injection oil prior to installing.
- Reinstall the injectors.
- Apply Loctite 243 and torque the two bolts to 10 N•m (89 lbf•in) that hold the fuel rail on.
- Make sure there is no leak at injectors when cranking the engine in the upcoming steps.

⚠ WARNING

If a leak is present, immediately stop the engine. Do not start engine until the leak is repaired.

⚠ WARNING

At preseason preparation, ensure to perform a fuel pressure test and ensure there is no leak. Also run engine and check for leaks. Refer to ENGINE MANAGEMENT section.

All Models

BATTERY

For battery removal, cleaning and storage, refer to CHARGING SYSTEM.

WATERCRAFT CLEANING

Clean the bilge with hot water and mild detergent or with bilge cleaner. Rinse thoroughly. Lift front end of watercraft to completely drain bilge. If any repairs are needed to body or to the hull, touch up paint and Gelcote® repair kit are available. Replace damaged labels/decals.

Wash the body with soap and water solution (only use mild detergent). Rinse thoroughly with fresh water. Remove marine organisms from the hull. Apply a nonabrasive wax.

CAUTION: Never clean fiberglass and plastic parts with strong detergent, degreasing agent, paint thinner, acetone, etc.

If the watercraft is to be stored outside, cover it with an opaque tarpaulin to prevent sun rays and grime from affecting the plastic components, watercraft finish as well as preventing dust accumulation.

CAUTION: The watercraft must never be left in water for storage. Never leave the watercraft stored in direct sunlight.

ADDITIONAL RECOMMENDED PROTECTION

All 2-Stroke Models

In cool regions (where freezing point may be encountered), cooling system should be filled pure antifreeze.

CAUTION: Antifreeze must be fed in cooling system. Otherwise remaining water will freeze. If antifreezing is not performed adequately engine/exhaust system may freeze and cause severe damage. Always use ethylene glycol antifreeze containing corrosion inhibitors specifically recommended for aluminum engines.

CAUTION: Use only undiluted antifreeze (100% concentration). The pre-mixed antifreeze available from Bombardier Recreational Products Inc. is not suitable for this particular application. Its concentration will be reduced when mixed with remaining water trapped in water jackets. Always use ethylene glycol antifreeze containing corrosion inhibitors specifically recommended for aluminum engines. Never use antifreeze for RV (recreational vehicles).

NOTE: When available, it is recommended to use biodegradable antifreeze compatible with internal combustion aluminum engines. This will contribute to protect the environment.

NOTE: The engine will not have to run during this operation but should have been ran before, to exhaust as much water as possible, from cooling system components.

All 2-Stroke Models except DI

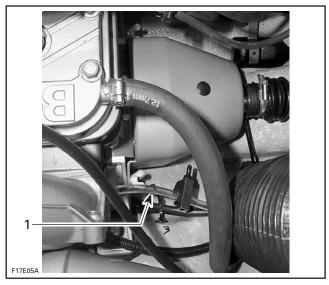
NOTE: This procedure requires approximately 2.5 L (2.6 U.S. gt) of antifreeze.

Hose Pinchers Installation

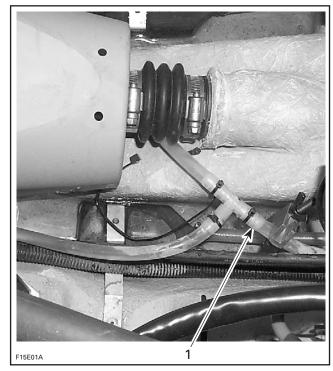
Some hoses have to be plugged to prevent draining, before filling cooling system jackets with the antifreeze.

All 2-Stroke Models except DI

Install hose pinchers at the following locations.

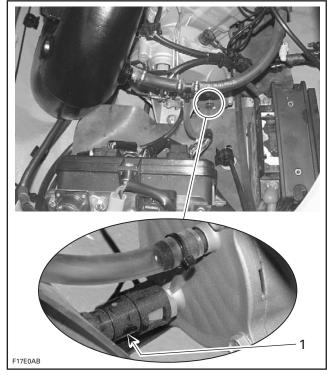


GTI AND GTI LE MODELS — 717 ENGINES 1. Engine drain hose



RFI MODELS — 787 ENGINES 1. Engine drain hose

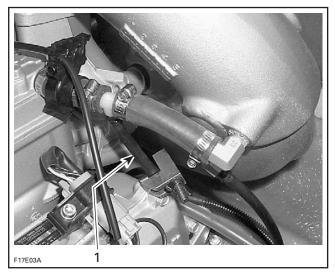
NOTE: On RFI models, make sure the hose is properly connected to the magneto cover.



RFI MODELS — 787 ENGINES
1. Fitting properly connected

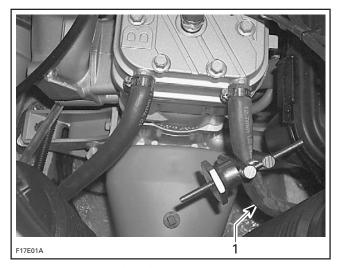
Subsection 04 (STORAGE)

Install hose pincher on injection hose going to tuned pipe.



GTI AND GTI LE MODELS — 717 ENGINES

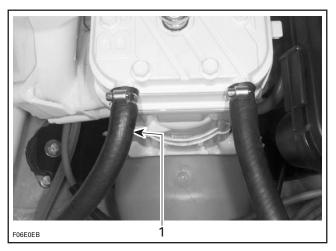
1. Hose pincher on injection hose going to tuned pipe



717 AND 787 RFI ENGINES
1. Engine water outlet hose

Hose Disconnection

Some hoses have to be disconnected. Disconnect hoses at the following location.



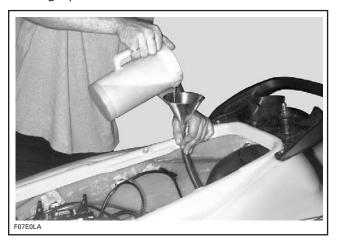
717 AND 787 RFI ENGINES
1. Disconnect engine water inlet hose

717 Engines

Temporarily install a short piece of hose to engine water inlet at cylinder head.

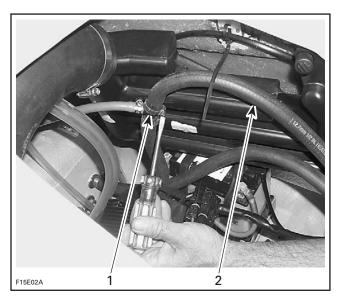
All 2-Stroke Models except DI

Insert a funnel into hose and pour antifreeze in engine until the colored solution appears at the cooling system bleed outlet.



787 RFI Engines

Disconnect hose just above T-fitting as shown.

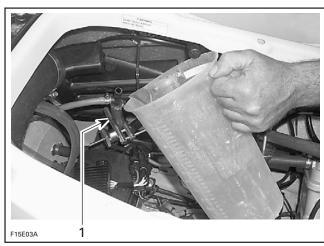


TYPICAL

- 1. Hose connecting to cylinder head inlet fitting
- 2. Disconnect hose above T-fitting

787 RFI Engines

Install a hose pincher just below T-fitting.



1. Hose pincher below T-fitting

Pour approximately 300 mL (10 oz) of antifreeze in the water regulator valve supply hose to allow antifreeze flowing through the valve and into muffler to protect them.

Reconnect hose to T-fitting and remove hose pincher (if applicable).

All 2-Stroke Models except DI

Remove temporary hose on 717 engines and reconnect engine water outlet hose.

Remove remaining hose pinchers.

Most of the antifreeze will drain out when removing the hose pinchers. Use a container to recover it. DISPOSE ANTIFREEZE AS PER YOUR LOCAL LAWS AND REGULATIONS.

NOTE: Although antifreeze will mainly drain out, the antifreeze has mixed with the water that was possibly trapped in the water jackets and thus preventing freezing problems.

At preseason preparation, drain the remaining antifreeze from cooling system prior to using the watercraft. Ensure no hose pincher was forgotten at storage.

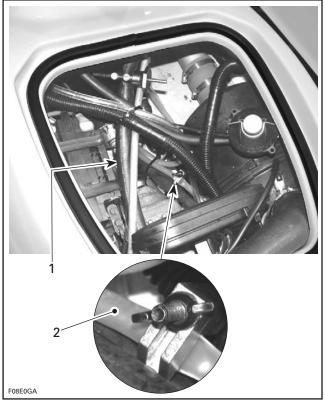
XP DI Models

NOTE: This procedure requires approximately 2.8 L (3 U.S. qt) of antifreeze.

Hose Pinchers Installation

Some hoses have to be plugged to prevent draining, before filling cooling system jackets with the antifreeze.

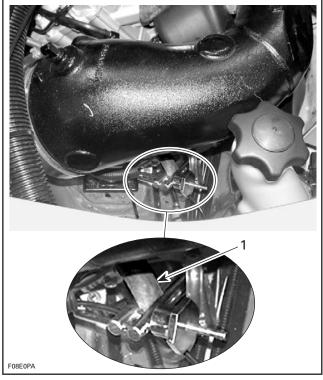
Install hose pinchers at the following location:



XP DI MODELS

- 1. Water inlet hose
- 2. Engine cylinder drain hose (coming from underneath engine)

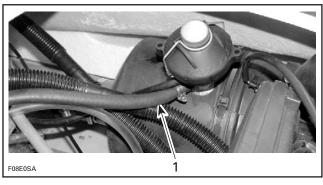
Subsection 04 (STORAGE)



XP DI MODELS
1. Water outlet hose underneath tuned pipe

Hose Disconnection

Disconnect the bottom hose at the water regulator valve on muffler.



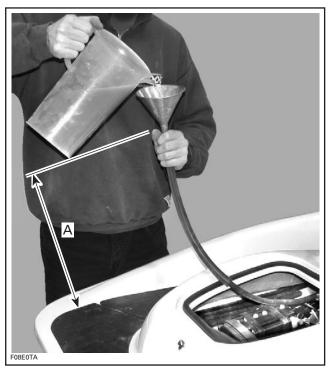
XP DI MODELS
1. Disconnect the bottom hose from water regulator valve

Temporarily install a hose of approximately 1 m (3 ft) with an internal diameter of 12.7 mm (1/2 in) over the previously disconnected hose.

Antifreeze

Insert a funnel into the temporary hose.

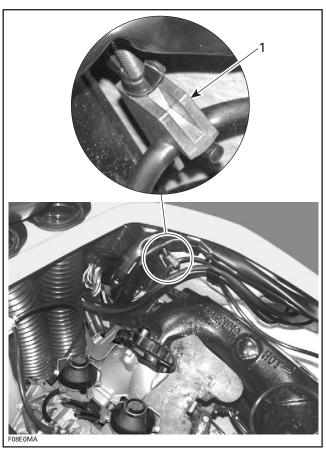
Ensure to hold the funnel approximately 1 m (3 ft) above the deck when pouring the antifreeze to create enough pressure so that it flows properly.



A. 1 m (3 ft) to ease antifreeze flow

Pour antifreeze in engine until the colored solution appears at cooling system bleed outlet.

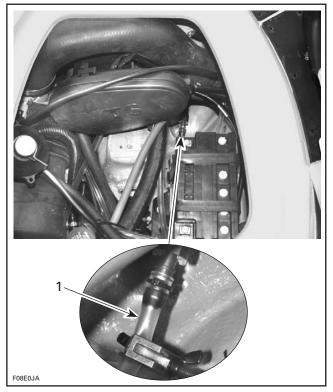
At this point, install a hose pincher on bleed outlet hose.



XP DI MODELS

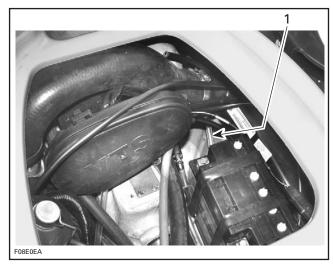
1. Bleed outlet hose

Continue to pour until antifreeze appears at the engine drain hose (crankcase cooling outlet). Then, install a hose pincher on this hose.



1. Engine drain hose (crankcase cooling outlet)

Continue to pour until antifreeze flows in air compressor water outlet hose.



XP DI MODELS

1. Air compressor water outlet hose

The pouring operation is over.

Remove pinchers in this order to allow proper flow of antifreeze.

Subsection 04 (STORAGE)

NOTE: Most of the antifreeze will drain out when removing the hose pinchers. Use a container to recover it. DISPOSE ANTIFREEZE AS PER YOUR LOCAL LAWS AND REGULATIONS.

- 1) Bleed outlet hose.
- 2) Engine drain hose (crankcase cooling cover outlet).
- 3) Engine cylinder drain hose.
- 4) Water outlet hose.
- 5) Water inlet hose.

Install a temporary hose on the open fitting of the water regulator valve.

Pour approximately 200 mL (7 oz) of antifreeze in the temporary hose to allow antifreeze flowing through the water regulator valve and into muffler to protect them.

Remove temporary hoses and reinstall the factory hose to water regulator valve.

NOTE: Although antifreeze will mainly drain out, the antifreeze has mixed with the water that was possibly trapped in the water jackets and thus preventing freezing problems.

At preseason preparation, drain the remaining antifreeze from cooling system prior to using the watercraft. Ensure no hose pincher was forgotten at storage.

4-TEC Engines

Refer to the COOLING SYSTEM section.

Antifreeze should be replaced for the storage period to prevent antifreeze deterioration.

Make sure to perform an antifreeze density test.

CAUTION: Improper antifreeze mixture might allow freezing of the liquid in the cooling system if vehicle is stored in area where freezing point is reached. This would seriously damage the engine. Failure to replace the antifreeze for storage may allow its degradation that could result in poor cooling when engine will be used.

All Models

ANTICORROSION TREATMENT

Wipe off any residual water in the engine compartment.

Spray BOMBARDIER LUBE lubricant over all metallic components in engine compartment.

Lubricate the throttle cable with BOMBARDIER LUBE lubricant.

4-TEC Models

Apply an anticorrosion product on drive shaft. Refer to PROPULSION.

All Models

The seat should be partially left opened during storage (the engine cover for the XP DI models). This will avoid engine compartment condensation and possible corrosion.

CHECKLIST

OPERATION	~
Check engine drain hose(s).	
Drain and clean impeller shaft reservoir (except 4-TEC engines).	
Verify jet pump grease (4-TEC engines)	
Lubricate PTO flywheel or seal carrier (except 4-TEC engines).	
Verify fuel system.	
Add Sea-Doo fuel stabilizer.	
Flush the cooling system (except 4-TEC engines).	
Flush the exhaust cooling system by running 4-TEC Engines the engine (4-TEC engines).	
Change engine oil and filter (4-TEC engines).	
Lubricate the engine.	
Remove, clean and store the battery.	
Clean the bilge.	
Wash the body.	
Add antifreeze solution to the cooling system (in cool regions) (except 4-TEC engines).	
Replace antifreeze. Check solution concentration in the cooling system (in cool regions) (4-TEC engines).	
Spray BOMBARDIER LUBE over all metallic components in engine compartment and in throttle cable.	
Spray BOMBARDIER LUBE in oil injection pump cable (except 4-TEC engines).	